



Technical Report No. 68.402.19.1195.01

Rev.01

Dated 2019-11-01

Client: AOK LED LIGHT COMPANY LIMITED

Address: East suite (2/F, Plant 4, St George's Science and Technology Industrial Park), 3/F, Building 1, St George's Science and Technology Industrial Park, North side of Xinyu Road, Xinqiao Street, Bao'an District, Shenzhen, Guangdong, China

Attn.: Mr. Wang

Sample Description: LED street lamp, LED garden lamp

Model No.: AOK-20WiP-NV-L3-00-XX70-T5-P-I, AOK-25WiP-NV-L3-00-XX70-T5-P-I, AOK-30WiP-NV-L3-00-XX70-T5-P-I, AOK-40WiP-NV-L3-00-XX70-T5-P-I, AOK-50WiP-NV-L3-00-XX70-T5-P-I, AOK-60WiP-NV-L3-00-XX70-T5-P-I, AOK-75WiP-NV-L3-00-XX70-T5-P-I, AOK-120WiP-NV-L3-00-XX70-T5-P-I, ('XX' can be 30-65, stands for LED CCT, e.g. 30=3000K, 65=6500K.)

Sample Received Date: 2019-01-21

Test Period: From 2019-01-21 to 2019-02-11

Location of Testing: TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch

Purpose of examination: Verification of RoHS (Restriction of Hazardous Substances) directive 2011/65/EU and its amendment (EU) 2015/863 on submitted samples

Test Result: Refer to following page(s)

Remark: -The result relates only to the items tested.
-Submitted model(s) is AOK-25WiP-NV-L3-00-XX70-T5-P-I. According to client's declaration, all other models have same material. Same material means same composition/supplier/colour/surface finishing; the only difference lies in the materials size.

TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch
TÜV SÜD Group

Prepared by:

Jason Peng
Project Handler



Reviewed by:

Scarlett Liang
Designated Reviewer

This technical report may only be quoted in full. Any use for advertising purposes must be granted in writing. This report is the result of a single examination of the object in question and is not generally applicable evaluation of the quality of other products in regular production.

TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch
TÜV SÜD Group
Building 12&13, Zhiheng Wisdomland Business Park,
Nantou Checkpoint road 2,
Shenzhen 518052, P. R. China

Tel.: (86) 755 88286998
Fax: (86) 755 88285299





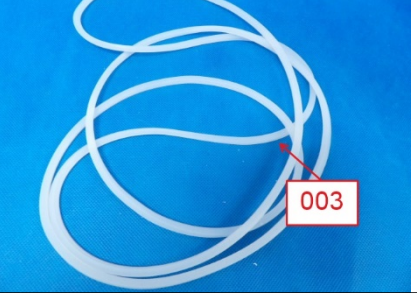
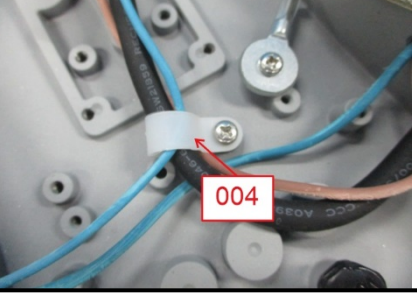
Technical Report No. 68.402.19.1195.01
Rev.01
Dated 2019-11-01

SUMMARY OF TEST RESULTS

No.	Test Requested	Conclusion	Remarks
1.	Heavy Metal (Pb, Cd, Hg and Cr VI) Content	PASS	
2.	Polybrominated Biphenyls (PBBs) and Polybrominated Diphenyl Ethers (PBDEs) Content	PASS	
3.	Phthalates (DEHP, BBP, DBP and DIBP) Content	PASS	



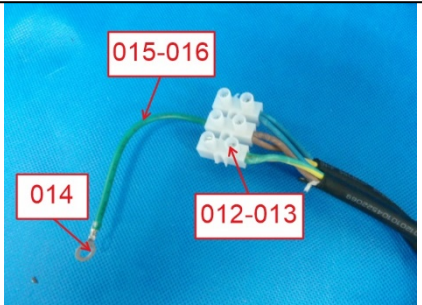



1. TESTED SUBJECT DESCRIPTION

Sample Number	Item Name	Tested Material Description	Photo
001	Case	Grey coated silvery metal case	
002	Cover	Black coated transparent glass cover	
003	Gasket	White soft plastic gasket	
004	Buckle	White plastic buckle	

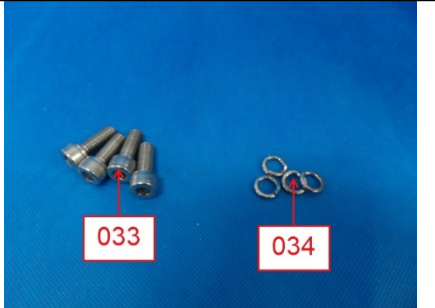
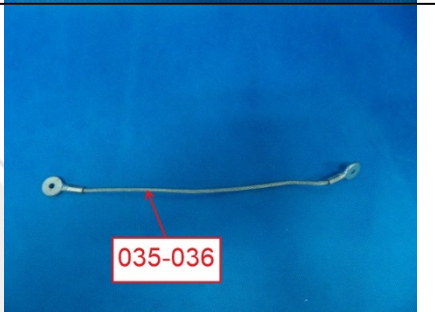
Technical Report No. 68.402.19.1195.01
Rev.01
Dated 2019-11-01

Sample Number	Item Name	Tested Material Description	Photo
005	Screw	Black plastic screw	
006	LED	Yellow/white plastic LED	
007	PCB	White PCB board	
008	Solder	Silvery metal solder	
009	Interface	White plastic shell	
010		Silvery metal pin	
011	Cover	Transparent plastic cover	

Technical Report No. 68.402.19.1195.01
Rev.01
Dated 2019-11-01

Sample Number	Item Name	Tested Material Description	Photo
012	Interface	White plastic shell	
013		Silvery metal plate	
014	Gasket	Silvery metal gasket	
015	Wire	Green soft plastic wire jacket	
016		Silvery metal wire	
017	Cable	Black soft plastic cable jacket	
018		Green/yellow soft plastic wire jacket	
019		Blue soft plastic wire jacket	
020		Brown soft plastic wire jacket	
021		Coppery metal wire	
022	Connecter	Grey plastic shell	
023		Orange plastic button	
024		Silvery metal plate	
025		Silvery/coppery metal plate	
026	Gasket	White translucent plastic gasket	
027	Plate	Grey coated silvery metal plate	
028	Screw	Silvery metal screw	
029	Nut	Silvery metal nut	
030	Gasket	White soft plastic gasket	
031	Screw	Silvery metal screw	
032	Holder	White plastic holder	

Technical Report No. 68.402.19.1195.01
Rev.01
Dated 2019-11-01

Sample Number	Item Name	Tested Material Description	Photo
033	Screw	Silvery metal screw	
034	Gasket	Silvery metal gasket	
035	Gasket	Silvery metal gasket	
036	Wire	Silvery metal wire	



2. TEST RESULTS

2.1. SCREENING TEST

Test method: With reference to EN 62321-1:2013, EN 62321-2:2014, EN 62321-3-1:2014 and EN 62321-8:2017. For Heavy Metals and Flame Retardants, analyzed by Energy Dispersive X-ray Fluorescence Spectrometers (XRF); for phthalates, analyzed by Gas Chromatography and Mass Spectrometry (GC-MS).

Sample No.	Heavy Metals and Flame Retardants					Phthalates			
	Cd	Cr	Hg	Pb	Br	DEHP	BBP	DBP	DIBP
001	BL	BL	BL	BL	NA	NA	NA	NA	NA
002	BL	Inc. ^(a)	BL	BL	NA	NA	NA	NA	NA
003	BL	BL	BL	BL	BL	BL	BL	BL	BL
004	BL	BL	BL	BL	BL	BL	BL	BL	BL
005	BL	BL	BL	BL	BL	BL	BL	BL	BL
006	BL	BL	BL	BL	BL	BL	BL	BL	BL
007	BL	BL	BL	BL	BL	BL	BL	BL	BL
008	BL	BL	BL	BL	NA	NA	NA	NA	NA
009	BL	BL	BL	BL	BL	BL	BL	BL	BL
010	BL	BL	BL	BL	NA	NA	NA	NA	NA
011	BL	BL	BL	BL	BL	BL	BL	BL	BL
012	BL	BL	BL	BL	BL	BL	BL	BL	BL
013	BL	Inc. ^(a)	BL	BL	NA	NA	NA	NA	NA
014	BL	BL	BL	BL	NA	NA	NA	NA	NA
015	BL	BL	BL	BL	BL	BL	BL	BL	BL
016	BL	BL	BL	BL	NA	NA	NA	NA	NA
017	BL	BL	BL	BL	BL	BL	BL	BL	BL
018	BL	BL	BL	BL	BL	BL	BL	BL	BL
019	BL	BL	BL	BL	BL	BL	BL	BL	BL
020	BL	BL	BL	BL	BL	BL	BL	BL	BL
021	BL	BL	BL	BL	NA	NA	NA	NA	NA
022	BL	BL	BL	BL	BL	BL	BL	BL	BL
023	BL	BL	BL	BL	BL	BL	BL	BL	BL
024	BL	Inc. ^(a)	BL	BL	NA	NA	NA	NA	NA
025	BL	BL	BL	BL	NA	NA	NA	NA	NA
026	BL	BL	BL	BL	BL	BL	BL	BL	BL
027	BL	BL	BL	BL	NA	NA	NA	NA	NA

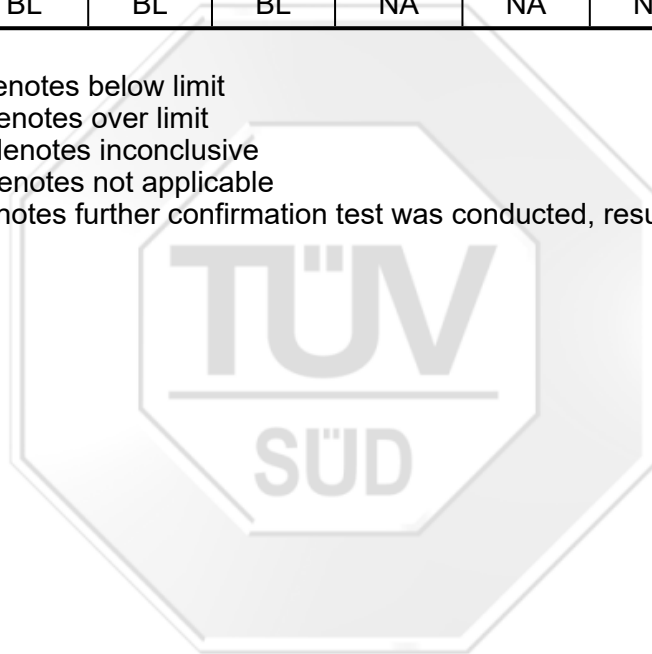


Technical Report No. 68.402.19.1195.01
Rev.01
Dated 2019-11-01

Sample No.	Heavy Metals and Flame Retardants					Phthalates			
	Cd	Cr	Hg	Pb	Br	DEHP	BBP	DBP	DIBP
028	BL	Inc. ^(a)	BL	BL	NA	NA	NA	NA	NA
029	BL	BL	BL	OL ^(a)	NA	NA	NA	NA	NA
030	BL	BL	BL	BL	BL	BL	BL	BL	BL
031	BL	BL	BL	OL ^(a)	NA	NA	NA	NA	NA
032	BL	BL	BL	BL	BL	BL	BL	BL	BL
033	BL	Inc. ^(a)	BL	BL	NA	NA	NA	NA	NA
034	BL	Inc. ^(a)	BL	BL	NA	NA	NA	NA	NA
035	BL	Inc. ^(a)	BL	BL	NA	NA	NA	NA	NA
036	BL	BL	BL	BL	NA	NA	NA	NA	NA

Note:

- “BL” denotes below limit
- “OL” denotes over limit
- “Inc.” denotes inconclusive
- “NA” denotes not applicable
- “(a)” denotes further confirmation test was conducted, results are listed in 2.2.



Technical Report No. 68.402.19.1195.01

Rev.01

Dated 2019-11-01

– XRF screening limits in mg/kg for regulated elements in various matrices

ELEMENT	POLYMER		
	BL	INCONCLUSIVE	OL
Cd	$X < (70 - 3\sigma)$	$(70 - 3\sigma) < X < (130 + 3\sigma)$	$X > (130 + 3\sigma)$
Pb	$X < (700 - 3\sigma)$	$(700 - 3\sigma) < X < (1300 + 3\sigma)$	$X > (1300 + 3\sigma)$
Hg	$X < (700 - 3\sigma)$	$(700 - 3\sigma) < X < (1300 + 3\sigma)$	$X > (1300 + 3\sigma)$
Br	$X < (300 - 3\sigma)$	$X > (300 - 3\sigma)$	NA
Cr	$X < (700 - 3\sigma)$	$X > (700 - 3\sigma)$	NA

ELEMENT	METAL		
	BL	INCONCLUSIVE	OL
Cd	$X < (70 - 3\sigma)$	$(70 - 3\sigma) < X < (130 + 3\sigma)$	$X > (130 + 3\sigma)$
Pb	$X < (700 - 3\sigma)$	$(700 - 3\sigma) < X < (1300 + 3\sigma)$	$X > (1300 + 3\sigma)$
Hg	$X < (700 - 3\sigma)$	$(700 - 3\sigma) < X < (1300 + 3\sigma)$	$X > (1300 + 3\sigma)$
Cr	$X < (700 - 3\sigma)$	$X > (700 - 3\sigma)$	NA

ELEMENT	COMPLEX MATERIAL		
	BL	INCONCLUSIVE	OL
Cd	$X < (50 - 3\sigma)$	$(50 - 3\sigma) < X < (150 + 3\sigma)$	$X > (150 + 3\sigma)$
Pb	$X < (500 - 3\sigma)$	$(500 - 3\sigma) < X < (1500 + 3\sigma)$	$X > (1500 + 3\sigma)$
Hg	$X < (500 - 3\sigma)$	$(500 - 3\sigma) < X < (1500 + 3\sigma)$	$X > (1500 + 3\sigma)$
Br	$X < (250 - 3\sigma)$	$X > (250 - 3\sigma)$	NA
Cr	$X < (500 - 3\sigma)$	$X > (500 - 3\sigma)$	NA

– Screening limits in mg/kg for regulated phthalates in various matrices

PHTHALATES	BL	INCONCLUSIVE
DEHP	$X < 600$	$X \geq 600$
BBP	$X < 600$	$X \geq 600$
DBP	$X < 600$	$X \geq 600$
DIBP	$X < 600$	$X \geq 600$

Technical Report No. 68.402.19.1195.01
Rev.01
Dated 2019-11-01

2.2. HEAVY METAL CONTENT

Test method: With reference to EN 62321-4:2017, EN 62321-5:2014, EN 62321-7-1:2015 and EN 62321-7-2:2017, analyzed by Inductively Coupled Plasma Optical Emission Spectrometer (ICP-OES) and UV-Vis spectrophotometer. [Reporting Limit: 2 mg/kg for Cadmium; 10 mg/kg or 0.10 µg/cm² for Hexavalent Chromium, 10 mg/kg for Lead and Mercury.]

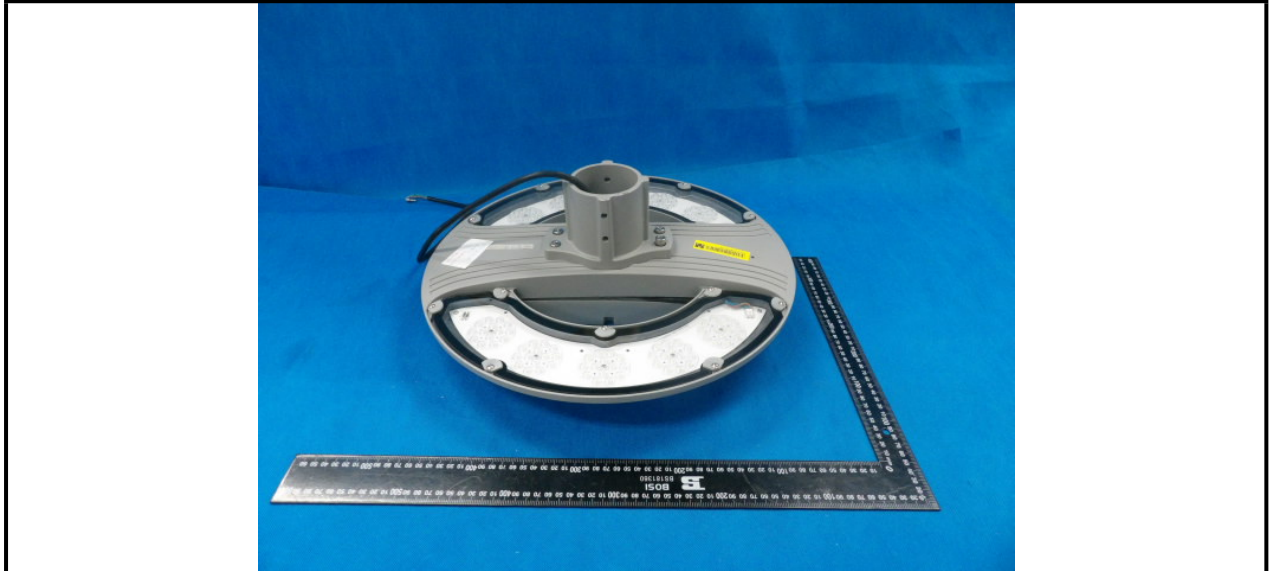
Sample No.	Result [mg/kg]			
	Total Cadmium	Hexavalent Chromium	Total Mercury	Total Lead
002	--	<10	--	--
013	--	Negative	--	--
024	--	Negative	--	--
028	--	Negative	--	--
029	--	--	--	2.64×10 ^{4(a)}
031	--	--	--	3.03×10 ^{4(a)}
033	--	Negative	--	--
034	--	Negative	--	--
035	--	Negative	--	--
RoHS Requirement	100	1000	1000	1000

Note:

- “mg/kg” denotes milligram per kilogram
- “<” denotes less than
- “µg/cm²” denotes micrograms per square centimeter
- “Negative” denotes the absorbance value of sample is less than the absorbance value of the 0.10 µg/cm² equivalent comparison standard solution, the sample is considered to be negative for Hexavalent Chromium.
- “--” denotes tested by XRF, result is listed in 2.1
- “(a)” denotes the exempt item according to DIRECTIVE 2011/65/EU Annex III item 6(c) “Copper alloy containing up to 4 % lead by weight”.

APPENDIX:

Photos of submitted products



AOK-25WiP-NV-L3-00-XX70-T5-P-I

